

SEQUENCE LISTING

<110> Imamura, Toru
Asada, Masahiro
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Ota, Keiko
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Orihara, Noriko
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<120> HEPARIN-BINDING PROTEINS MODIFIED WITH SUGAR CHAINS,
METHOD OF PRODUCING THE SAME AND PHARMACEUTICAL
COMPOSITIONS CONTAINING THE SAME

<130> 382.1019

<140> 09/121,017

<141> 1998-07-22

<150> 307721/1997

<151> 1997-11-10

<160> 31

<170> PatentIn Ver. 2.0

<210> 1

<211> 221

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of

sequence for a part of human rydocan and a part of human fibroblast

growth factor 1

<400> 1

Met Ala Pro Ala Arg Leu Phe Ala Leu Leu Leu Phe Phe Val Gly Gly

1 5 10 15

Val Ala Glu Ser Ile Arg Glu Thr Glu Val Ile Asp Pro Gln Asp Leu

20 25 30

Leu Glu Gly Arg Tyr Phe Ser Gly Ala Leu Pro Asp Asp Glu Asp Val

35 40 45

Val Gly Pro Gly Gln Glu Ser Asp Asp Phe Glu Leu Ser Gly Ser Gly

50 55 60

Asp Leu Asp Asp Leu Glu Asp Ser Met Ile Gly Pro Glu Val Val His

65 70 75 80

Pro Leu Val Pro Leu Asp Ala Asn Tyr Lys Lys Pro Lys Leu Leu Tyr

85 90 95

Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val

100 105 110

Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser

115 120 125

Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln

130	135	140
Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro		
145	150	155
Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn		
165	170	175
Thr Tyr Ile Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu		
180	185	190
Lys Lys Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln		
195	200	205
Lys Ala Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp		
210	215	220

<210> 2

<211> 663

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of

sequence for a part of human rydocan and a part of human
fibroblast

growth factor 1

<220>

<221> CDS

<222> (1)..(663)

<400> 2

atg gcc ccc gcc cgt ctg ttc gcg ctg ctg ctg ttc ttc gta ggc gga	48
Met Ala Pro Ala Arg Leu Phe Ala Leu Leu Leu Phe Phe Val Gly Gly	
1 5 10 15	
gtc gcc gag tcg atc cga gag act gag gtc atc gac ccc cag gac ctc	96
Val Ala Glu Ser Ile Arg Glu Thr Glu Val Ile Asp Pro Gln Asp Leu	
20 25 30	
cta gaa ggc cga tac ttc tcc gga gcc cta cca gac gat gag gat gta	144
Leu Glu Gly Arg Tyr Phe Ser Gly Ala Leu Pro Asp Asp Glu Asp Val	
35 40 45	
gtg ggg ccc ggg cag gaa tct gat gac ttt gag ctg tct ggc tct gga	192
Val Gly Pro Gly Gln Glu Ser Asp Asp Phe Glu Leu Ser Gly Ser Gly	
50 55 60	
gat ctg gat gac ttg gaa gac tcc atg atc ggc cct gaa gtt gtc cat	240
Asp Leu Asp Asp Leu Glu Asp Ser Met Ile Gly Pro Glu Val Val His	
65 70 75 80	
ccc ttg gtg cct cta gat gct aat tac aag aag ccc aaa ctc ctc tac	288
Pro Leu Val Pro Leu Asp Ala Asn Tyr Lys Lys Pro Lys Leu Leu Tyr	
85 90 95	
tgt agc aac ggg ggc cac ttc ctg agg atc ctt ccg gat ggc aca gtg	336
Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val	
100 105 110	
gat ggg aca agg gac agg agc gac cag cac att cag ctg cag ctc agt	384
Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser	
115 120 125	

gcg gaa agc gtg ggg gag gtg tat ata aag agt acc gag act ggc cag 432
 Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln
 130 135 140

tac ttg gcc atg gac acc gac ggg ctt tta tac ggc tca cag aca cca 480
 Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro
 145 150 155 160

aat gag gaa tgt ttg ttc ctg gaa agg ctg gag gag aac cat tac aac 528
 Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn
 165 170 175

acc tat ata tcc aag aag cat gca gag aag aat tgg ttt gtt ggc ctc 576
 Thr Tyr Ile Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu
 180 185 190

aag aag aat ggg agc tgc aaa cgc ggt cct cgg act cac tat ggc cag 624
 Lys Lys Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln
 195 200 205

aaa gca atc ttg ttt ctc ccc ctg cca gtc tct tct gat 663
 Lys Ala Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp
 210 215 220

<210> 3

<211> 175

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of

sequence for a part of mouse fibroblast growth factor 6 and

a part of human fibroblast growth factor 1

<400> 3

Met Ser Arg Gly Ala Gly Arg Val Gln Gly Thr Leu Gln Ala Leu Val

1 5 10 15

Phe Leu Gly Val Leu Val Gly Met Val Val Pro Ser Pro Ala Gly Ala

20 25 30

Arg Ala Asn Gly Thr Leu Leu Asp Ala Asn Tyr Lys Lys Pro Lys Leu

35 40 45

Leu Tyr Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly

50 55 60

Thr Val Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln

65 70 75 80

Leu Ser Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr

85 90 95

Gly Gln Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln

100 105 110

Thr Pro Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His

115 120 125

Tyr Asn Thr Tyr Ile Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val

130 135 140

Gly Leu Lys Lys Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr

145 150 155 160

Gly Gln Lys Ala Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp

165

170

175

<210> 4

<211> 525

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of
sequence for a part of mouse fibroblast growth factor 6 and
a part of human fibroblast growth factor 1

<220>

<221> CDS

<222> (1)..(525)

<400> 4

atg tcc cgg gga gca gga cgt gtt cag ggc acg ctg cag gct ctc gtc 48

Met Ser Arg Gly Ala Gly Arg Val Gln Gly Thr Leu Gln Ala Leu Val

1 5 10 15

ttc tta ggc gtc cta gtg ggc atg gtg gtg ccc tca cct gcc ggc gcc 96

Phe Leu Gly Val Leu Val Gly Met Val Val Pro Ser Pro Ala Gly Ala

20 25 30

cgc gcc aac ggc acg cta ctg gac gct aat tac aag aag ccc aaa ctc 144

Arg Ala Asn Gly Thr Leu Leu Asp Ala Asn Tyr Lys Lys Pro Lys Leu

35 40 45

ctc tac tgt agc aac ggg ggc cac ttc ctg agg atc ctt ccg gat ggc 192

Leu Tyr Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly

50 55 60

aca gtg gat ggg aca agg gac agg agc gac cag cac att cag ctg cag 240
 Thr Val Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln
 65 70 75 80

ctc agt gcg gaa agc gtg ggg gag gtg tat ata aag agt acc gag act 288
 Leu Ser Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr
 85 90 95

ggc cag tac ttg gcc atg gac acc gac ggg ctt tta tac ggc tca cag 336
 Gly Gln Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln
 100 105 110

aca cca aat gag gaa tgt ttg ttc ctg gaa agg ctg gag gag aac cat 384
 Thr Pro Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His
 115 120 125

tac aac acc tat ata tcc aag aag cat gca gag aag aat tgg ttt gtt 432
 Tyr Asn Thr Tyr Ile Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val
 130 135 140

ggc ctc aag aag aat ggg agc tgc aaa cgc ggt cct cgg act cac tat 480
 Gly Leu Lys Lys Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr
 145 150 155 160

ggc cag aaa gca atc ttg ttt ctc ccc ctg cca gtc tct tct gat 525
 Gly Gln Lys Ala Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp
 165 170 175

<210> 5

<211> 181

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of
sequence for a part of mouse fibroblast growth factor 6,
a part of human fibroblast growth factor 1 and an artificial
sequence

<400> 5

Met Ser Arg Gly Ala Gly Arg Val Gln Gly Thr Leu Gln Ala Leu Val
1 5 10 15

Phe Leu Gly Val Leu Val Gly Met Val Val Pro Ser Pro Ala Gly Ala
20 25 30

Arg Ala Gln Gly Thr Leu Leu Asp Ala Asn Tyr Lys Lys Pro Lys Leu
35 40 45

Leu Tyr Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly
50 55 60

Thr Val Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln
65 70 75 80

Leu Ser Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr
85 90 95

Gly Gln Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln
100 105 110

Thr Pro Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Ala Ala
115 120 125

Thr Pro Ala Pro Asn His Tyr Asn Thr Tyr Ile Ser Lys Lys His Ala
130 135 140

Glu Lys Asn Trp Phe Val Gly Leu Lys Lys Asn Gly Ser Cys Lys Arg
145 150 155 160

Gly Pro Arg Thr His Tyr Gly Gln Lys Ala Ile Leu Phe Leu Pro Leu
165 170 175

Pro Val Ser Ser Asp
180

<210> 6

<211> 543

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of
sequence for a part of mouse fibroblast growth factor 6,
a part of human fibroblast growth factor 1 and an artificial
sequence

<220>

<221> CDS

<222> (1)..(543)

<400> 6

atg tcc cgg gga gca gga cgt gtt cag ggc acg ctg cag gct ctc gtc 48
Met Ser Arg Gly Ala Gly Arg Val Gln Gly Thr Leu Gln Ala Leu Val
1 5 10 15

ttc tta ggc gtc cta gtg ggc atg gtg gtg ccc tca cct gcc ggc gcc	96
Phe Leu Gly Val Leu Val Gly Met Val Val Pro Ser Pro Ala Gly Ala	
20 25 30	
cgc gcc caa ggc acg cta ctg gac gct aat tac aag aag ccc aaa ctc	144
Arg Ala Gln Gly Thr Leu Leu Asp Ala Asn Tyr Lys Lys Pro Lys Leu	
35 40 45	
ctc tac tgt agc aac ggg ggc cac ttc ctg agg atc ctt ccg gat ggc	192
Leu Tyr Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly	
50 55 60	
aca gtg gat ggg aca agg gac agg agc gac cag cac att cag ctg cag	240
Thr Val Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln	
65 70 75 80	
ctc agt gcg gaa agc gtg ggg gag gtg tat ata aag agt acc gag act	288
Leu Ser Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr	
85 90 95	
ggc cag tac ttg gcc atg gac acc gac ggg ctt tta tac ggc tca cag	336
Gly Gln Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln	
100 105 110	
aca cca aat gag gaa tgt ttg ttc ctg gaa agg ctg gag gag gct gct	384
Thr Pro Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Ala Ala	
115 120 125	
act cca gct cca aac cat tac aac acc tat ata tcc aag aag cat gca	432
Thr Pro Ala Pro Asn His Tyr Asn Thr Tyr Ile Ser Lys Lys His Ala	
130 135 140	

gag aag aat tgg ttt gtt ggc ctc aag aag aat ggg agc tgc aaa cgc 480
Glu Lys Asn Trp Phe Val Gly Leu Lys Lys Asn Gly Ser Cys Lys Arg
145 150 155 160

ggt cct cgg act cac tat ggc cag aaa gca atc ttg ttt ctc ccc ctg 528
Gly Pro Arg Thr His Tyr Gly Gln Lys Ala Ile Leu Phe Leu Pro Leu
165 170 175

cca gtc tct tct gat 543
Pro Val Ser Ser Asp
180

<210> 7

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer for PCR

<400> 7

ttgtcgaccc accatggccc ccgcccgtct 30

<210> 8

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer for PCR

<400> 8

ttgatatcta gaggcaccaa gggatg

26

<210> 9

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer for PCR

<400> 9

gcgtcgacag cgctaattac aagaagccca aactc

35

<210> 10

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer for PCR

<400> 10

ccgaattcga attctttaat cagaagagac tgg

33

<210> 11

<211> 64

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer for PCR

<400> 11

gcgtcgaccc accatgtccc ggggagcagg acgtgttcag ggcacgctgc aggctctcgt 60

cttc

64

<210> 12

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer for PCR

<400> 12

gcgatatcca gtagcgtgcc gttggcgcg

29

<210> 13

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer for PCR

<400> 13

gcgtcgaccc accatgtc

18

<210> 14

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer for PCR

<400> 14

gcgatatcca gtagcgtgcc ttgggcgcg

29

<210> 15

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer for PCR

<400> 15

gctggaggag gctgctaactc cagctccaaa ccattaca

38

<210> 16

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer for PCR

<400> 16

gccgctctag aactagtgga t

21

<210> 17

<211> 200

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of

sequence for a part of human ryudocan and a part of human
fibroblast

growth factor 1

<400> 17

Met Ala Pro Ala Arg Leu Phe Ala Leu Leu Leu Phe Phe Val Gly Gly

1 5 10 15

Val Ala Glu Ser Ile Arg Glu Thr Glu Val Ile Asp Pro Gln Asp Leu

20 25 30

Leu Glu Gly Arg Tyr Phe Ser Gly Ala Leu Pro Asp Asp Glu Asp Val

35 40 45

Val Gly Pro Gly Gln Glu Ser Asp Asp Phe Glu Leu Ser Gly Ser Gly

50 55 60

Asp Ala Asn Tyr Lys Lys Pro Lys Leu Leu Tyr Cys Ser Asn Gly Gly

65 70 75 80

His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly Thr Arg Asp

85 90 95

Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu Ser Val Gly

100	105	110
Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr Leu Ala Met Asp		
115	120	125
Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu Glu Cys Leu		
130	135	140
Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr Tyr Ile Ser Lys		
145	150	155
		160
Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys Asn Gly Ser		
165	170	175
Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala Ile Leu Phe		
180	185	190
Leu Pro Leu Pro Val Ser Ser Asp		
195	200	

<210> 18

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of

sequence for a part of human ryudocan and a part of human fibroblast

growth factor 1

<220>

<221> CDS

<222> (1)..(600)

<400> 18

atg gcc ccc gcc cgt ctg ttc gcg ctg ctg ctg ttc ttc gta ggc gga 48
Met Ala Pro Ala Arg Leu Phe Ala Leu Leu Leu Phe Phe Val Gly Gly
1 5 10 15

gtc gcc gag tcg atc cga gag act gag gtc atc gac ccc cag gac ctc 96
Val Ala Glu Ser Ile Arg Glu Thr Glu Val Ile Asp Pro Gln Asp Leu
20 25 30

cta gaa ggc cga tac ttc tcc gga gcc cta cca gac gat gag gat gta 144
Leu Glu Gly Arg Tyr Phe Ser Gly Ala Leu Pro Asp Asp Glu Asp Val
35 40 45

gtg ggg ccc ggg cag gaa tct gat gac ttt gag ctg tct ggc tct gga 192
Val Gly Pro Gly Gln Glu Ser Asp Asp Phe Glu Leu Ser Gly Ser Gly
50 55 60

gat gct aat tac aag aag ccc aaa ctc ctc tac tgt agc aac ggg ggc 240
Asp Ala Asn Tyr Lys Lys Pro Lys Leu Leu Tyr Cys Ser Asn Gly Gly
65 70 75 80

cac ttc ctg agg atc ctt ccg gat ggc aca gtg gat ggg aca agg gac 288
His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly Thr Arg Asp
85 90 95

agg agc gac cag cac att cag ctg cag ctc agt gcg gaa agc gtg ggg 336
Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu Ser Val Gly
100 105 110

gag gtg tat ata aag agt acc gag act ggc cag tac ttg gcc atg gac 384

Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr Leu Ala Met Asp	
115	120 125
acc gac ggg ctt tta tac ggc tca cag aca cca aat gag gaa tgt ttg	432
Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu Glu Cys Leu	
130	135 140
ttc ctg gaa agg ctg gag gag aac cat tac aac acc tat ata tcc aag	480
Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr Tyr Ile Ser Lys	
145	150 155 160
aag cat gca gag aag aat tgg ttt gtt ggc ctc aag aag aat ggg agc	528
Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys Asn Gly Ser	
165	170 175
tgc aaa cgc ggt cct cgg act cac tat ggc cag aaa gca atc ttg ttt	576
Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala Ile Leu Phe	
180	185 190
ctc ccc ctg cca gtc tct tct gat	600
Leu Pro Leu Pro Val Ser Ser Asp	
195	200

<210> 19

<211> 200

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of

sequence for a part of human ryudocan mutant and a part of human

fibroblast growth factor 1

<400> 19

Met Ala Pro Ala Arg Leu Phe Ala Leu Leu Leu Phe Phe Val Gly Gly

1 5 10 15

Val Ala Glu Ser Ile Arg Glu Thr Glu Val Ile Asp Pro Gln Asp Leu

20 25 30

Leu Glu Gly Arg Tyr Phe Ser Gly Ala Leu Ser Asp Asp Glu Asp Val

35 40 45

Val Gly Pro Gly Gln Glu Ser Asp Asp Phe Glu Leu Ser Gly Ser Gly

50 55 60

Asp Ala Asn Tyr Lys Lys Pro Lys Leu Leu Tyr Cys Ser Asn Gly Gly

65 70 75 80

His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly Thr Arg Asp

85 90 95

Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu Ser Val Gly

100 105 110

Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr Leu Ala Met Asp

115 120 125

Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu Glu Cys Leu

130 135 140

Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr Tyr Ile Ser Lys

145 150 155 160

Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys Asn Gly Ser

165

170

175

Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala Ile Leu Phe

180

185

190

Leu Pro Leu Pro Val Ser Ser Asp

195

200

<210> 20

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of

sequence for a part of human ryudocan mutant and a part of
human

fibroblast growth factor 1

<220>

<221> CDS

<222> (1)..(600)

<400> 20

atg gcc ccc gcc cgt ctg ttc gcg ctg ctg ctg ttc ttc gta ggc gga 48

Met Ala Pro Ala Arg Leu Phe Ala Leu Leu Leu Phe Phe Val Gly Gly

1

5

10

15

gtc gcc gag tcg atc cga gag act gag gtc atc gac ccc cag gac ctc 96

Val Ala Glu Ser Ile Arg Glu Thr Glu Val Ile Asp Pro Gln Asp Leu

20

25

30

cta gaa ggc cga tac ttc tcc gga gcc cta tca gac gat gag gat gta	144
Leu Glu Gly Arg Tyr Phe Ser Gly Ala Leu Ser Asp Asp Glu Asp Val	
35 40 45	
gtg ggg ccc ggg cag gaa tct gat gac ttt gag ctg tct ggc tct gga	192
Val Gly Pro Gly Gln Glu Ser Asp Asp Phe Glu Leu Ser Gly Ser Gly	
50 55 60	
gat gct aat tac aag aag ccc aaa ctc ctc tac tgt agc aac ggg ggc	240
Asp Ala Asn Tyr Lys Lys Pro Lys Leu Leu Tyr Cys Ser Asn Gly Gly	
65 70 75 80	
cac ttc ctg agg atc ctt ccg gat ggc aca gtg gat ggg aca agg gac	288
His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly Thr Arg Asp	
85 90 95	
agg agc gac cag cac att cag ctg cag ctc agt gcg gaa agc gtg ggg	336
Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu Ser Val Gly	
100 105 110	
gag gtg tat ata aag agt acc gag act ggc cag tac ttg gcc atg gac	384
Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr Leu Ala Met Asp	
115 120 125	
acc gac ggg ctt tta tac ggc tca cag aca cca aat gag gaa tgt ttg	432
Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu Glu Cys Leu	
130 135 140	
ttc ctg gaa agg ctg gag gag aac cat tac aac acc tat ata tcc aag	480
Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr Tyr Ile Ser Lys	
145 150 155 160	
aag cat gca gag aag aat tgg ttt gtt ggc ctc aag aag aat ggg agc	528

Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys Asn Gly Ser
165 170 175

tgc aaa cgc ggt cct cgg act cac tat ggc cag aaa gca atc ttg ttt 576
Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala Ile Leu Phe
180 185 190

ctc ccc ctg cca gtc tct tct gat 600
Leu Pro Leu Pro Val Ser Ser Asp
195 200

<210> 21

<211> 254

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of
sequence for a part of human ryudocan and a part of human
fibroblast
growth factor 1

<400> 21

Met Ala Pro Ala Arg Leu Phe Ala Leu Leu Leu Phe Phe Val Gly Gly
1 5 10 15

Val Ala Glu Ser Ile Arg Glu Thr Glu Val Ile Asp Pro Gln Asp Leu
20 25 30

Leu Glu Gly Arg Tyr Phe Ser Gly Ala Leu Pro Asp Asp Glu Asp Val
35 40 45

Val Gly Pro Gly Gln Glu Ser Asp Asp Phe Glu Leu Ser Gly Ser Gly
50 55 60

Asp Leu Asp Asp Leu Glu Asp Ser Met Ile Gly Pro Glu Val Val His
65 70 75 80

Pro Leu Val Pro Leu Asp Asn His Ile Pro Glu Arg Ala Gly Ser Gly
85 90 95

Ser Gln Val Pro Thr Glu Pro Lys Lys Leu Glu Glu Asn Glu Val Ile
100 105 110

Pro Lys Arg Ile Ser Pro Val Ala Asn Tyr Lys Lys Pro Lys Leu Leu
115 120 125

Tyr Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr
130 135 140

Val Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu
145 150 155 160

Ser Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly
165 170 175

Gln Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr
180 185 190

Pro Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr
195 200 205

Asn Thr Tyr Ile Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly
210 215 220

Leu Lys Lys Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly
225 230 235 240

Gln Lys Ala Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp
245 250

<210> 22

<211> 762

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of

sequence for a part of human ryudocan and a part of human
fibroblast

growth factor 1

<220>

<221> CDS

<222> (1)..(762)

<400> 22

atg gcc ccc gcc cgt ctg ttc gcg ctg ctg ctg ttc ttc gta ggc gga 48

Met Ala Pro Ala Arg Leu Phe Ala Leu Leu Leu Phe Phe Val Gly Gly

1 5 10 15

gtc gcc gag tcg atc cga gag act gag gtc atc gac ccc cag gac ctc 96

Val Ala Glu Ser Ile Arg Glu Thr Glu Val Ile Asp Pro Gln Asp Leu

20 25 30

cta gaa ggc cga tac ttc tcc gga gcc cta cca gac gat gag gat gta 144

Leu Glu Gly Arg Tyr Phe Ser Gly Ala Leu Pro Asp Asp Glu Asp Val

35

40

45

gtg ggg ccc ggg cag gaa tct gat gac ttt gag ctg tct ggc tct gga 192
Val Gly Pro Gly Gln Glu Ser Asp Asp Phe Glu Leu Ser Gly Ser Gly

50

55

60

gat ctg gat gac ttg gaa gac tcc atg atc ggc cct gaa gtt gtc cat 240
Asp Leu Asp Asp Leu Glu Asp Ser Met Ile Gly Pro Glu Val Val His

65

70

75

80

ccc ttg gtg cct cta gat aac cat atc cct gag agg gca ggg tct ggg 288
Pro Leu Val Pro Leu Asp Asn His Ile Pro Glu Arg Ala Gly Ser Gly

85

90

95

agc caa gtc ccc acc gaa ccc aag aaa cta gag gag aat gag gtt atc 336
Ser Gln Val Pro Thr Glu Pro Lys Lys Leu Glu Glu Asn Glu Val Ile

100

105

110

ccc aag aga atc tca ccc gtt gct aat tac aag aag ccc aaa ctc ctc 384
Pro Lys Arg Ile Ser Pro Val Ala Asn Tyr Lys Lys Pro Lys Leu Leu

115

120

125

tac tgt agc aac ggg ggc cac ttc ctg agg atc ctt ccg gat ggc aca 432
Tyr Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr

130

135

140

gtg gat ggg aca agg gac agg agc gac cag cac att cag ctg cag ctc 480
Val Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu

145

150

155

160

agt gcg gaa agc gtg ggg gag gtg tat ata aag agt acc gag act ggc 528
Ser Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly

165

170

175

cag tac ttg gcc atg gac acc gac ggg ctt tta tac ggc tca cag aca 576
Gln Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr

180

185

190

cca aat gag gaa tgt ttg ttc ctg gaa agg ctg gag gag aac cat tac 624
Pro Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr

195

200

205

aac acc tat ata tcc aag aag cat gca gag aag aat tgg ttt gtt ggc 672
Asn Thr Tyr Ile Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly

210

215

220

ctc aag aag aat ggg agc tgc aaa cgc ggt cct cgg act cac tat ggc 720
Leu Lys Lys Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly

225

230

235

240

cag aaa gca atc ttg ttt ctc ccc ctg cca gtc tct tct gat 762
Gln Lys Ala Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp

245

250

<210> 23

<211> 281

<212> PRT

<213> Artificial Sequence

<223> Description of Artificial Sequence: fusion of

sequence for a part of human ryudocan and a part of human
fibroblast

growth factor 1

<400> 23

Met Ala Pro Ala Arg Leu Phe Ala Leu Leu Leu Phe Phe Val Gly Gly

1	5	10	15
Val Ala Glu Ser Ile Arg Glu Thr Glu Val Ile Asp Pro Gln Asp Leu			
20	25	30	
Leu Glu Gly Arg Tyr Phe Ser Gly Ala Leu Pro Asp Asp Glu Asp Val			
35	40	45	
Val Gly Pro Gly Gln Glu Ser Asp Asp Phe Glu Leu Ser Gly Ser Gly			
50	55	60	
Asp Leu Asp Asp Leu Glu Asp Ser Met Ile Gly Pro Glu Val Val His			
65	70	75	80
Pro Leu Val Pro Leu Asp Asn His Ile Pro Glu Arg Ala Gly Ser Gly			
85	90	95	
Ser Gln Val Pro Thr Glu Pro Lys Lys Leu Glu Glu Asn Glu Val Ile			
100	105	110	
Pro Lys Arg Ile Ser Pro Val Glu Glu Ser Glu Asp Val Ser Asn Lys			
115	120	125	
Val Ser Met Ser Ser Thr Val Gln Gly Ser Asn Ile Phe Glu Arg Thr			
130	135	140	
Glu Val Ala Asn Tyr Lys Lys Pro Lys Leu Leu Tyr Cys Ser Asn Gly			
145	150	155	160
Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly Thr Arg			
165	170	175	
Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu Ser Val			

	180	185	190
Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr Leu Ala Met			
195	200	205	
Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu Glu Cys			
210	215	220	
Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr Tyr Ile Ser			
225	230	235	240
Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys Asn Gly			
245	250	255	
Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala Ile Leu			
260	265	270	
Phe Leu Pro Leu Pro Val Ser Ser Asp			
275	280		

<210> 24

<211> 843

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of
sequence for a part of human ryudocan and a part of human
fibroblast
growth factor 1

<220>

<221> CDS

<222> (1)..(843)

<400> 24

atg gcc ccc gcc cgt ctg ttc gcg ctg ctg ctg ttc ttc gta ggc gga 48
Met Ala Pro Ala Arg Leu Phe Ala Leu Leu Leu Phe Phe Val Gly Gly
1 5 10 15

gtc gcc gag tcg atc cga gag act gag gtc atc gac ccc cag gac ctc 96
Val Ala Glu Ser Ile Arg Glu Thr Glu Val Ile Asp Pro Gln Asp Leu
20 25 30

cta gaa ggc cga tac ttc tcc gga gcc cta cca gac gat gag gat gta 144
Leu Glu Gly Arg Tyr Phe Ser Gly Ala Leu Pro Asp Asp Glu Asp Val
35 40 45

gtg ggg ccc ggg cag gaa tct gat gac ttt gag ctg tct ggc tct gga 192
Val Gly Pro Gly Gln Glu Ser Asp Asp Phe Glu Leu Ser Gly Ser Gly
50 55 60

gat ctg gat gac ttg gaa gac tcc atg atc ggc cct gaa gtt gtc cat 240
Asp Leu Asp Asp Leu Glu Asp Ser Met Ile Gly Pro Glu Val Val His
65 70 75 80

ccc ttg gtg cct cta gat aac cat atc cct gag agg gca ggg tct ggg 288
Pro Leu Val Pro Leu Asp Asn His Ile Pro Glu Arg Ala Gly Ser Gly
85 90 95

agc caa gtc ccc acc gaa ccc aag aaa cta gag gag aat gag gtt atc 336
Ser Gln Val Pro Thr Glu Pro Lys Lys Leu Glu Glu Asn Glu Val Ile
100 105 110

ccc aag aga atc tca ccc gtt gaa gag agt gag gat gtg tcc aac aag 384

Pro Lys Arg Ile Ser Pro Val Glu Glu Ser Glu Asp Val Ser Asn Lys	
115 120 125	
gtg tca atg tcc agc act gtg cag ggc agc aac atc ttt gag aga acg	432
Val Ser Met Ser Ser Thr Val Gln Gly Ser Asn Ile Phe Glu Arg Thr	
130 135 140	
gag gtc gct aat tac aag aag ccc aaa ctc ctc tac tgt agc aac ggg	480
Glu Val Ala Asn Tyr Lys Lys Pro Lys Leu Leu Tyr Cys Ser Asn Gly	
145 150 155 160	
ggc cac ttc ctg agg atc ctt ccg gat ggc aca gtg gat ggg aca agg	528
Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly Thr Arg	
165 170 175	
gac agg agc gac cag cac att cag ctg cag ctc agt gcg gaa agc gtg	576
Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu Ser Val	
180 185 190	
ggg gag gtg tat ata aag agt acc gag act ggc cag tac ttg gcc atg	624
Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr Leu Ala Met	
195 200 205	
gac acc gac ggg ctt tta tac ggc tca cag aca cca aat gag gaa tgt	672
Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu Glu Cys	
210 215 220	
ttg ttc ctg gaa agg ctg gag gag aac cat tac aac acc tat ata tcc	720
Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr Tyr Ile Ser	
225 230 235 240	
aag aag cat gca gag aag aat tgg ttt gtt ggc ctc aag aag aat ggg	768
Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys Asn Gly	

245

250

255

agc tgc aaa cgc ggt cct cgg act cac tat ggc cag aaa gca atc ttg 816

Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala Ile Leu

260

265

270

ttt ctc ccc ctg cca gtc tct tct gat

843

Phe Leu Pro Leu Pro Val Ser Ser Asp

275

280

<210> 25

<211> 172

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of
sequence for a part of mouse fibroblast growth factor 6 and
a part of human fibroblast growth factor 1

<400> 25

Met Ser Arg Gly Ala Gly Arg Val Gln Gly Thr Leu Gln Ala Leu Val

1

5

10

15

Phe Leu Gly Val Leu Val Gly Met Val Val Pro Ser Pro Ala Gly Ala

20

25

30

Arg Ala Asn Gly Ser Ala Asn Tyr Lys Lys Pro Lys Leu Leu Tyr Cys

35

40

45

Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp

50

55

60

Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala
65 70 75 80

Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr
85 90 95

Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn
100 105 110

Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr
115 120 125

Tyr Ile Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys
130 135 140

Lys Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys
145 150 155 160

Ala Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp
165 170

<210> 26

<211> 516

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of
sequence for a part of mouse fibroblast growth factor 6 and
a part of human fibroblast growth factor 1

<220>

<221> CDS

<222> (1)..(516)

<400> 26

atg tcc cgg gga gca gga cgt gtt cag ggc acg ctg cag gct ctc gtc 48
Met Ser Arg Gly Ala Gly Arg Val Gln Gly Thr Leu Gln Ala Leu Val
1 5 10 15

ttc tta ggc gtc cta gtg ggc atg gtg gtg ccc tca cct gcc ggc gcc 96
Phe Leu Gly Val Leu Val Gly Met Val Val Pro Ser Pro Ala Gly Ala
20 25 30

cgc gcc aac ggc tcg gct aat tac aag aag ccc aaa ctc ctc tac tgt 144
Arg Ala Asn Gly Ser Ala Asn Tyr Lys Lys Pro Lys Leu Leu Tyr Cys
35 40 45

agc aac ggg ggc cac ttc ctg agg atc ctt ccg gat ggc aca gtg gat 192
Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp
50 55 60

ggg aca agg gac agg agc gac cag cac att cag ctg cag ctc agt gcg 240
Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala
65 70 75 80

gaa agc gtg ggg gag gtg tat ata aag agt acc gag act ggc cag tac 288
Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr
85 90 95

ttg gcc atg gac acc gac ggg ctt tta tac ggc tca cag aca cca aat 336
Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn
100 105 110

gag gaa tgt ttg ttc ctg gaa agg ctg gag gag aac cat tac aac acc 384
 Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr
 115 120 125

tat ata tcc aag aag cat gca gag aag aat tgg ttt gtt ggc ctc aag 432
 Tyr Ile Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys
 130 135 140

aag aat ggg agc tgc aaa cgc ggt cct cgg act cac tat ggc cag aaa 480
 Lys Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys
 145 150 155 160

gca atc ttg ttt ctc ccc ctg cca gtc tct tct gat 516
 Ala Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp
 165 170

<210> 27

<211> 210

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of
 sequence for a part of mouse fibroblast growth factor 6 and
 a part of human fibroblast growth 1

<400> 27

Met Ser Arg Gly Ala Gly Arg Val Gln Gly Thr Leu Gln Ala Leu Val
 1 5 10 15

Phe Leu Gly Val Leu Val Gly Met Val Val Pro Ser Pro Ala Gly Ala
 20 25 30

Arg Ala Asn Gly Thr Leu Leu Asp Ser Arg Gly Trp Gly Thr Leu Leu
35 40 45

Ser Arg Ser Arg Ala Gly Leu Ala Gly Glu Ile Ser Gly Val Asn Trp
50 55 60

Glu Ser Gly Tyr Leu Val Gly Ile Lys Arg Gln Ala Asn Tyr Lys Lys
65 70 75 80

Pro Lys Leu Leu Tyr Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu
85 90 95

Pro Asp Gly Thr Val Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile
100 105 110

Gln Leu Gln Leu Ser Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser
115 120 125

Thr Glu Thr Gly Gln Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr
130 135 140

Gly Ser Gln Thr Pro Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu
145 150 155 160

Glu Asn His Tyr Asn Thr Tyr Ile Ser Lys Lys His Ala Glu Lys Asn
165 170 175

Trp Phe Val Gly Leu Lys Lys Asn Gly Ser Cys Lys Arg Gly Pro Arg
180 185 190

Thr His Tyr Gly Gln Lys Ala Ile Leu Phe Leu Pro Leu Pro Val Ser
195 200 205

Ser Asp

210

<210> 28

<211> 630

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of
sequence for a part of mouse fibroblast growth factor 6 and
a part of human fibroblast growth 1

<220>

<221> CDS

<222> (1)..(630)

<400> 28

atg tcc cgg gga gca gga cgt gtt cag ggc acg ctg cag gct ctc gtc 48
Met Ser Arg Gly Ala Gly Arg Val Gln Gly Thr Leu Gln Ala Leu Val
1 5 10 15

ttc tta ggc gtc cta gtg ggc atg gtg gtg ccc tca cct gcc ggc gcc 96
Phe Leu Gly Val Leu Val Gly Met Val Val Pro Ser Pro Ala Gly Ala
20 25 30

cgc gcc aac ggc acg cta ctg gac tcc aga ggc tgg ggc acc ctc ttg 144
Arg Ala Asn Gly Thr Leu Leu Asp Ser Arg Gly Trp Gly Thr Leu Leu
35 40 45

tcc agg tct cga gct ggg cta gct gga gag att tcg ggt gtg aat tgg 192

Ser Arg Ser Arg Ala Gly Leu Ala Gly Glu Ile Ser Gly Val Asn Trp	
50 55 60	
gaa agc ggc tat ttg gtg ggc att aag cga cag gct aat tac aag aag	240
Glu Ser Gly Tyr Leu Val Gly Ile Lys Arg Gln Ala Asn Tyr Lys Lys	
65 70 75 80	
ccc aaa ctc ctc tac tgt agc aac ggg ggc cac ttc ctg agg atc ctt	288
Pro Lys Leu Leu Tyr Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu	
85 90 95	
ccg gat ggc aca gtg gat ggg aca agg gac agg agc gac cag cac att	336
Pro Asp Gly Thr Val Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile	
100 105 110	
cag ctg cag ctc agt gcg gaa agc gtg ggg gag gtg tat ata aag agt	384
Gln Leu Gln Leu Ser Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser	
115 120 125	
acc gag act ggc cag tac ttg gcc atg gac acc gac ggg ctt tta tac	432
Thr Glu Thr Gly Gln Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr	
130 135 140	
ggc tca cag aca cca aat gag gaa tgt ttg ttc ctg gaa agg ctg gag	480
Gly Ser Gln Thr Pro Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu	
145 150 155 160	
gag aac cat tac aac acc tat ata tcc aag aag cat gca gag aag aat	528
Glu Asn His Tyr Asn Thr Tyr Ile Ser Lys Lys His Ala Glu Lys Asn	
165 170 175	
tgg ttt gtt ggc ctc aag aag aat ggg agc tgc aaa cgc ggt cct cgg	576
Trp Phe Val Gly Leu Lys Lys Asn Gly Ser Cys Lys Arg Gly Pro Arg	

180

185

190

act cac tat ggc cag aaa gca atc ttg ttt ctc ccc ctg cca gtc tct 624

Thr His Tyr Gly Gln Lys Ala Ile Leu Phe Leu Pro Leu Pro Val Ser

195

200

205

tct gat

630

Ser Asp

210

<210> 29

<211> 180

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of
sequence for a part of mouse fibroblast growth factor 6,
a part of human fibroblast growth factor 1 and an artificial
sequence

<400> 29

Met Ser Arg Gly Ala Gly Arg Val Gln Gly Thr Leu Gln Ala Leu Val

1

5

10

15

Phe Leu Gly Val Leu Val Gly Met Val Val Pro Ser Pro Ala Gly Ala

20

25

30

Arg Ala Asn Gly Thr Leu Leu Asp Ala Asn Tyr Lys Lys Pro Lys Leu

35

40

45

Leu Tyr Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly

50

55

60

Thr Val Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln
65 70 75 80

Leu Ser Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr
85 90 95

Gly Gln Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln
100 105 110

Thr Pro Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn Ala
115 120 125

Thr Pro Ala Pro His Tyr Asn Thr Tyr Ile Ser Lys Lys His Ala Glu
130 135 140

Lys Asn Trp Phe Val Gly Leu Lys Lys Asn Gly Ser Cys Lys Arg Gly
145 150 155 160

Pro Arg Thr His Tyr Gly Gln Lys Ala Ile Leu Phe Leu Pro Leu Pro
165 170 175

Val Ser Ser Asp
180

<210> 30

<211> 540

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: fusion of
sequence for a part of mouse fibroblast growth factor 6,
a part of human fibroblast growth factor 1 and an artificial
sequence

<220>

<221> CDS

<222> (1)..(540)

<400> 30

atg tcc cgg gga gca gga cgt gtt cag ggc acg ctg cag gct ctc gtc 48
Met Ser Arg Gly Ala Gly Arg Val Gln Gly Thr Leu Gln Ala Leu Val
1 5 10 15

ttc tta ggc gtc cta gtg ggc atg gtg gtg ccc tca cct gcc ggc gcc 96
Phe Leu Gly Val Leu Val Gly Met Val Val Pro Ser Pro Ala Gly Ala
20 25 30

cgc gcc aac ggc acg cta ctg gac gct aat tac aag aag ccc aaa ctc 144
Arg Ala Asn Gly Thr Leu Leu Asp Ala Asn Tyr Lys Lys Pro Lys Leu
35 40 45

ctc tac tgt agc aac ggg ggc cac ttc ctg agg atc ctt ccg gat ggc 192
Leu Tyr Cys Ser Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly
50 55 60

aca gtg gat ggg aca agg gac agg agc gac cag cac att cag ctg cag 240
Thr Val Asp Gly Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln
65 70 75 80

ctc agt gcg gaa agc gtg ggg gag gtg tat ata aag agt acc gag act 288
Leu Ser Ala Glu Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr
85 90 95

ggc cag tac ttg gcc atg gac acc gac ggg ctt tta tac ggc tca cag 336
 Gly Gln Tyr Leu Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln

100 105 110

aca cca aat gag gaa tgt ttg ttc ctg gaa agg ctg gag gag aac gct 384
 Thr Pro Asn Glu Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn Ala

115 120 125

act cca gct cca cat tac aac acc tat ata tcc aag aag cat gca gag 432
 Thr Pro Ala Pro His Tyr Asn Thr Tyr Ile Ser Lys Lys His Ala Glu

130 135 140

aag aat tgg ttt gtt ggc ctc aag aag aat ggg agc tgc aaa cgc ggt 480
 Lys Asn Trp Phe Val Gly Leu Lys Lys Asn Gly Ser Cys Lys Arg Gly

145 150 155 160

cct cgg act cac tat ggc cag aaa gca atc ttg ttt ctc ccc ctg cca 528
 Pro Arg Thr His Tyr Gly Gln Lys Ala Ile Leu Phe Leu Pro Leu Pro

165 170 175

gtc tct tct gat 540
 Val Ser Ser Asp

180

<210> 31

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer for PCR

<400> 31

aacaaaagct gggtaccggg

20